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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/880,375	06/13/2001	Bulent O. Yavuz	3638G	4986

7590 01/02/2004

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EXAMINER	
ILDEBRANDO, CHRISTINA A	
ART UNIT	PAPER NUMBER
1725	

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No.	Applicant(s)	
	09/880,375	YAVUZ ET AL.	
	Examiner	Art Unit	
	Christina Ildebrando	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *39-58 and 71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *39-58 and 71* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 27, 2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 39-54, 56-58, and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US 5,296,198) in view of Hertl et al. (US 5,284,638) and Wan et al. (US 4,714,694).

Abe et al. (US 5,296,198) teaches a process for the purification of exhaust gas emanating from an internal combustion engine that contains nitrogen oxides and hydrocarbons. It is taught that the catalytic system comprises a hydrocarbon adsorbent and additional catalytic material to reduce the nitrogen oxides present in the exhaust

gas stream (column 2, line 65 – column 3, line 7). It is taught that the adsorbent used is a high silica zeolite and that it is exchanged with a noble metal such as Pt or Pd. It is taught that the additional catalytic material is a heat resistant oxide containing at least one noble metal (column 3, lines 36-42). The reference further teaches that the zeolite is used to adsorb hydrocarbons from the cool exhaust gas upon start up of the engine and that as the temperature rises, said hydrocarbons are released from the zeolite and converted by the catalyst material (column 4, lines 24-40). The zeolites mentioned by the reference include ZSM-5 and Y (column 5, lines 17-31). It is also taught that the zeolite to be used should be the hydrogen type in view of the heat resistance such type gives (column 5, lines 45-48).

The second component of the catalyst system is a heat resistant oxide such as alumina and it is taught that additional rare earth oxide such as cerium should be added in order to achieve a higher three way catalytic activity and heat resistance (column 6, lines 39-48).

It is further taught that the amount of zeolite to oxide material is between 10:90 to 85:15 and the total noble metals loaded are present in an amount between 10-35 g/ft^3 (column 6, lines 49-57). These values overlap or encompass the amounts of materials instantly claimed. It is taught that the materials are loaded on to a honeycomb monolith structure (column 9, lines 1-23). Lastly, attention is directed to Example 3 which uses a zeolite in conjunction with cerium oxide and alumina oxide having a surface area of 200 m^2/g.

The difference between the reference to Abe et al. and the claims are that the reference does not teach the instantly claimed surface area of the bulk ceria present or the use of beta zeolite.

The reference to Hertl et al. (US 5,284,638) also teaches a catalyst system that comprises both a zeolite adsorbent used in conjunction with a heat resistant metal oxide for use in exhaust gas treatment processes. It is taught that the catalyst/adsorbent combination is effective for use in diesel engines (column 3, line 27). It is also taught that the adsorbent used can be zeolite Beta or ZSM-5 or Y zeolite (see column 4, lines 41-44 and the Table at column 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of Abe et al. to include the use of zeolite Beta, in light of the teachings of Hertl et al. One of ordinary skill would have been motivated to use the zeolite beta of Hertl et al. in the composition taught by Abe et al. because zeolite Beta is an art recognized functionally equivalent adsorbent to the zeolites of Abe et al. Because both catalyst compositions can be used in analogous processes, i.e. exhaust gas purification processes, one would have a reasonable expectation of success from the combination.

With respect to the surface area of the ceria, Wan et al. (US 4,714,694) teaches the manufacture of a diesel exhaust gas catalyst. It is taught that a beneficial catalyst carrier can be produced by using alumina having a surface area meeting the instant claims in combination with bulk ceria having the required surface area. See column 10, lines 1-35 and the Examples of '694. It is taught that a platinum group metal is

supported by the composition. Finally, it is taught that the catalyst composition is effective for the oxidation and reduction of components found in the exhaust gas emanating from the diesel exhaust gas engine.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the invention of Abe et al. to include the use of a cerium oxide component having the claimed surface area in light of the teachings of Wan et al. One of ordinary skill in the art at the time the invention was made would have had the motivation to use the specific alumina ceria catalyst composition of Wan et al. in conjunction with the zeolites in the process taught by Abe et al. because of the functional equivalence of the ceria-alumina-noble metal catalyst of both Wan et al. and Abe et al. Because both catalyst compositions can be used in the purification of exhaust gas, one would have a reasonable expectation of success from the combination.

With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because

overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ.

Regarding claim 71, the "consisting essentially of" language in the claim is noted. The term limits the claim to the specified ingredients and those that do not affect the basic and novel characteristics of a composition. *Ex parte Davis et al.*, 80 USPQ 448. When applicant contends that modifying or additional components in the reference composition are excluded by the recitation "consisting essentially of," applicant has the burden of showing the basic and novel characteristics of the claimed composition, i.e. a showing that the introduction of these components would materially change the characteristics of applicant's composition. *In re De Lajarte*, 143 USPQ 256.

4. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. '198 in view of Hertl et al. and Wan et al. as applied to claims 39-54, 56-58, and 71 above, and further in view of Abe et al. (US 5,164,350).

The references teach the features as previously described which can be found at the aforementioned locations.

The difference between the modified disclosure of Abe et al. '198 and the claims is that the modified disclosure of Abe et al. '198 further does not teach the instantly claimed layer structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the instantly claimed layer structure in the catalyst of Abe et al. '198 because of the teachings by Abe et al. '350 that such a layer arrangement is conventional in the art of exhaust gas catalysis. Motivation to use the layer structure

further comes from the fact that the catalysts of each reference are functionally equivalent and analogous, i.e. both are directed to exhaust gas purification catalysts containing zeolite loaded with noble metal used in conjunction with a heat resistant oxide material also loaded with noble metal.

Response to Arguments

5. Applicant's arguments, filed October 27, 2003, with respect to the rejection of claims 39-58 and 71 under 35 USC 112, first paragraph have been fully considered and are persuasive. The rejection of claims 39-58 under 35 USC 112, first paragraph, has been withdrawn.

6. Applicant's remaining arguments filed October 27, 2003 have been fully considered but they are not persuasive. The discussion in the final office action mailed October 23, 2002 (pages 8-11) is incorporated by reference herein.

Additionally, Applicant argues that the disclosures of the prior art are very specific in the use of certain zeolites and there is no basis for the examiner to contend that the zeolites disclosed in Abe '198 may be substituted for the Beta zeolite taught by Hertl '638. This argument has been considered but is not persuasive. With reference to column 6, lines 35-50 of '198 and columns 3-4 and 7 of '638, it is clear that the zeolites in the catalyst compositions taught by the references function in an analogous manner to purify automobile engine exhaust gas and therefore the beta zeolite taught by the Hertl '638 reference is analogous and functionally equivalent to the zeolites taught by the primary reference, thereby providing one of ordinary skill motivation to combine the

teachings of the reference. Applicant has not presented any evidence tending to establish the zeolites of Abe '198 and Hertl '638 would not be functional equivalent. Therefore, applicant has not rebutted the prima facie case of obviousness set forth by the examiner.

Applicant further argues that the combination of references is thus improper and that the rejection is based upon hindsight reasoning. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the motivation to combine the references comes solely from the teachings of the prior art, i.e. the suggestion by Hertl that the zeolites are functionally equivalent and analogous for the purification of engine exhaust gas.

With respect to claim 71, applicant argues that the semi-closed language of the claim (i.e. "consisting essentially of" language) distinguishes other the references by excluding the other types of zeolites shown in the art and the heating electrodes. This argument has been considered but is not persuasive. The combined teachings of the references would motivate one of ordinary skill to substitute beta zeolite for the other

zeolites taught by the reference. Excluding other zeolites is not relevant to the rejection at issue.

Applicant further argues that the claimed compositions display unexpected results. However, the comparative data relied upon by applicant is not commensurate in scope with what has been claimed and does not compare the claimed catalyst with the prior art relied upon by the examiner. The comparative data compares an iron doped beta zeolite to compositions which do not contain zeolite. This is not sufficient because the claims specifically exclude iron doped zeolites. Further, applicant has not compared the claimed catalyst to catalyst which contain other kinds of zeolite. Therefore, no meaningful conclusions can be drawn from this data.

Finally, applicant argues that the "consisting essentially of" language excludes the presence of the heater of the Abe '198 reference. However, the "consisting essentially of" language applies only to the catalytic material. The catalyst composition itself is open to contain other elements – refer to claim 71: "A catalyst composition...comprises." (emphasis added). Therefore, this argument is not persuasive.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Ildebrando whose telephone number is (571) 272-1176. The examiner can normally be reached on Monday-Friday, 7:30-5, with Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Christina Ildebrando
Patent Examiner
Art Unit 1725
12/16/03

CAI
December 16, 2003